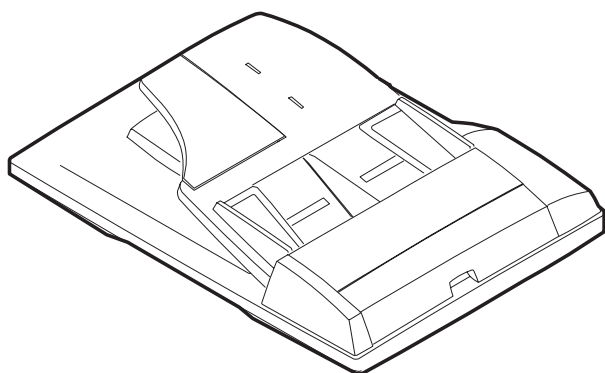


# SHARP SERVICE MANUAL

CODE: 00ZARSP2//A2E



**Digital copier option  
Single Pass Feeder  
(SPF)**

**MODEL AR-SP2**

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Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

## [1] PRODUCT OUTLINE

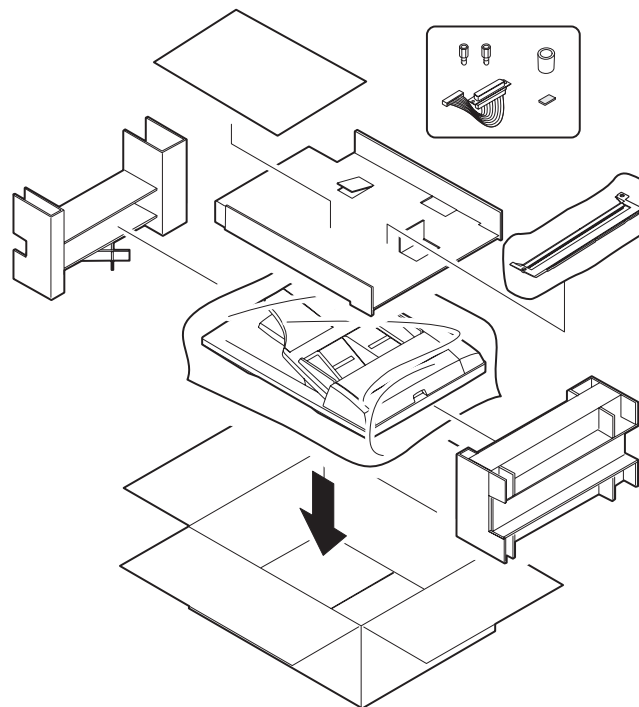
This unit is installed to the top of the copier to feed document automatically. Documents are automatically transported to the copier to allow continuous copying.

## [2] SPECIFICATIONS

Document set direction	Face up
Document set position	Center reference
Document transport system	Sheet through type
Document feed sequence	Top takeup
Document size	AB series: A3 ~ A5 Inch series: 11 × 17 ~ 8.5 × 5.5
Document weight	56 ~ 90g/m <sup>2</sup>
Document set quantity	30 sheets (30 sheets, 90 g/m <sup>2</sup> ) Max. thickness 4mm
Dimensions	583mm (W) × 435mm (D) × 131mm (H)
Weight	About 5.3 Kg
Power source	Supplied from the copier.
Document size detection	Document feed tray upper
Detection size	Japan: A3, B4, A4, A4R, B5, B5R Inch series: 11 × 17, 8.5 × 14, 8.5 × 11, 8.5 × 11R, 8.5 × 5.5 EX AB series: A3, B4, A4, A4R, A5
Multi copy	Models without memory: S → S unavailable    S → D unavailable (Duplex copy model only)  Models with memory copy: S → S allowed        S → D unavailable (Duplex copy model only)  With the electronic sort board: S → S allowed        S → D allowed (Duplex copy model only)
Document mixture	Mixture paper feed: Copy mode: Unavailable FAX mode: Allowed (Same width)
Random paper feed	Unavailable
Document reverse	None
Display section (LED)	None
Document replacement speed	S → S: 16 sheets/min (Document replacement rate 100%)

## [3] UNPACKING AND INSTALLATION

### 1. Unpacking



### 2. Installation

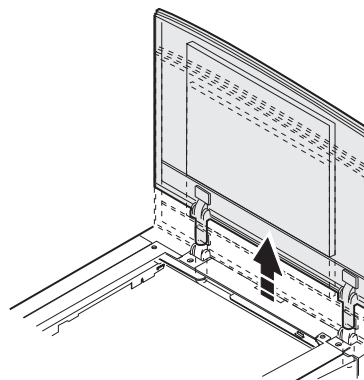
#### (1) Package contents

Name	Quantity
Screw	2
SPF glass holding cover	1
SPF harness	1
Ring core	1
Installation manual	1

\* Be careful not to use the removed screws in different locations.

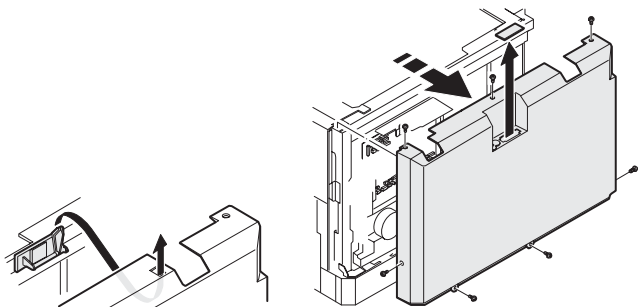
#### 1) Remove the document cover.

Lift the document cover and remove it from the copier.



## 2) Remove the rear cabinet of the copier.

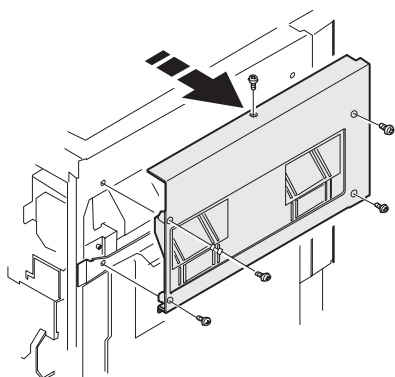
Remove the seven screws and remove the cabinet.  
Remove the connector cover.



\* If a open/close detection is attached, be careful not to break the actuator.

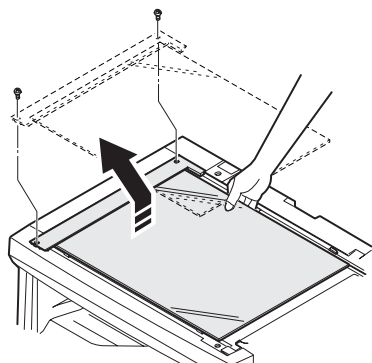
## 3) Remove the right cabinet.

Remove the five screws.



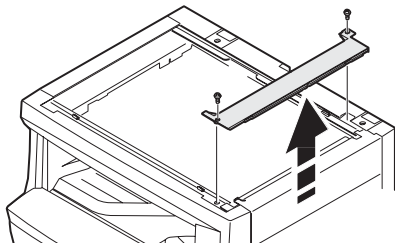
## 4) Remove the document glass holder (left side) and the document glass.

Remove the two screws and carefully remove the document glass holder (left side) and the document glass. Do not separate the glass and holder.



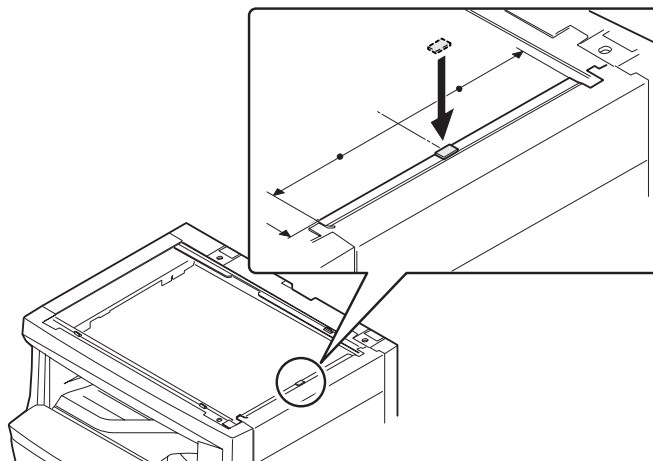
## 5) Remove the document glass holder cover (right side).

Remove the two screws.



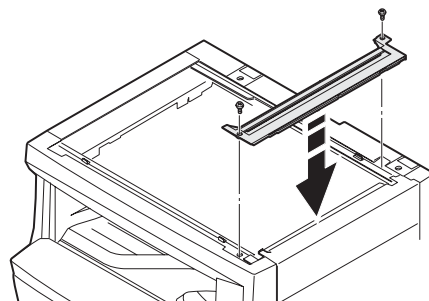
## 6) Attach the cushion (one position).

Remove the cover of the double-sided adhesive tape and paste the cushion taking care not to allow it to extend over the plate edges.



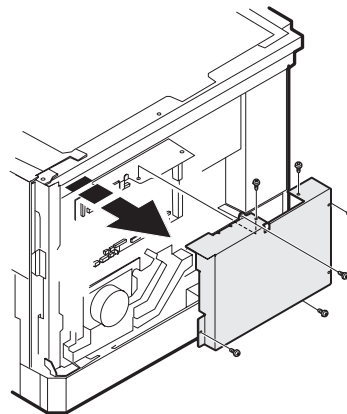
## 7) Attach the SPF glass holder cover.

After attaching the SPF glass holding cover, attach the document glass.



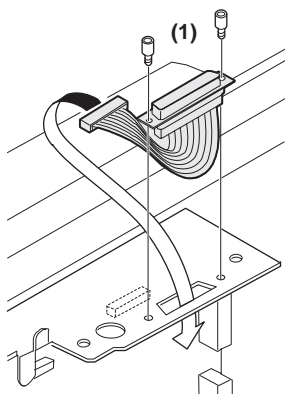
## 8) Remove the PWB shield plate.

Remove the six screws.

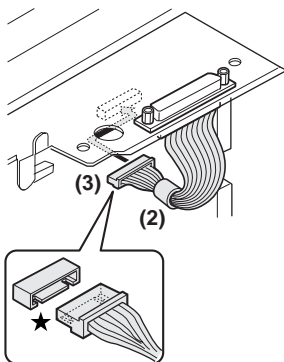


### 9) Install the SPF harness and the ring core (included together with the unit).

Pass the SPF harness through the plate hole from the above and fix it to the plate with the supplied two hex cap screws. (1)

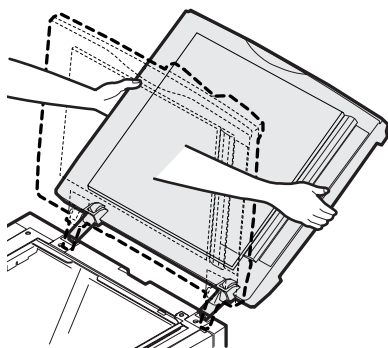


Pass the SPF harness through the ring core (2), and connect it to the main PWB connector (CN11) inside the copier. (3)



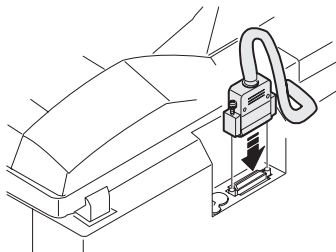
### 10) Install the SPF to the copier.

Tilt the SPF backward and insert the hinges into the hinge guides.



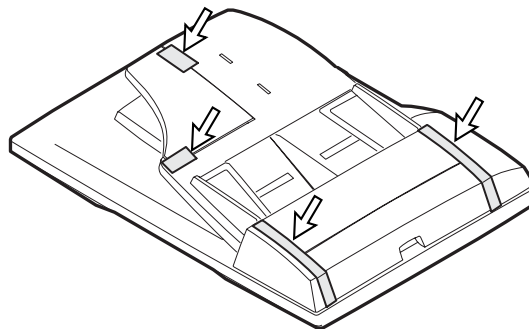
### 11) Install the interface harness.

Connect the interface harness from the SPF to the machine and tighten the screws.



### 12) Remove the filament tape.

Remove the filament tape at four positions.



**Connect the power cord, turn the main switch ON, and perform the following procedure.**

### 13) Check the magnification ratio.

Place a document on the document glass and make a copy. Then, place a document in the automatic document feeder tray and make a copy.

\* If the copy magnification ratio of the copy made with the automatic document feeder is different than that of the copy image made with the document glass, perform the magnification adjustment according to the procedure in the service manual.

### 14) Check the center displacement.

Place a document on the document glass and make a copy. Then, place a document in the automatic document feeder tray and make a copy.

\* If the center of the copy from the automatic document feeder is displaced from the copy from the document glass, adjust the center according to the procedure in the service manual.

### 15) Check the leading edge margin.

Place a document on the document glass and make a copy. Then, place a document in the automatic document feeder tray and make a copy.

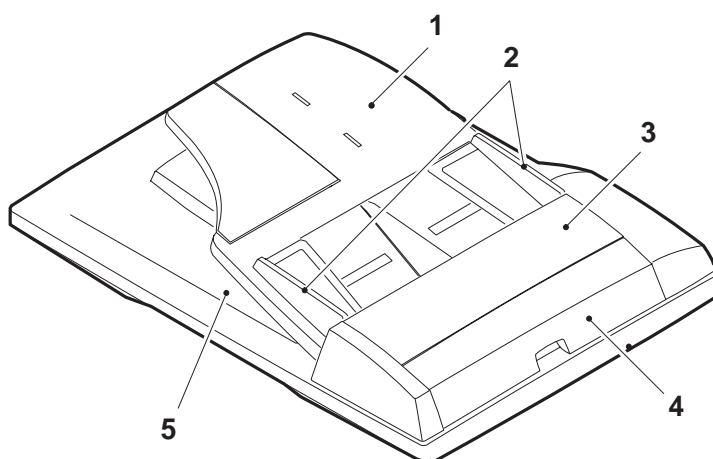
\* If the leading edge margin of the copy from the automatic document feeder is displaced from the copy from the document glass, adjust the margin according to the procedure in the service manual.

### 16) Check the open/close detection position. (only models with original size detection)

If the open/close detection position measured by the open/close detection position adjustment method in the service manual is outside the specified values, adjust the position in accordance with the manual.

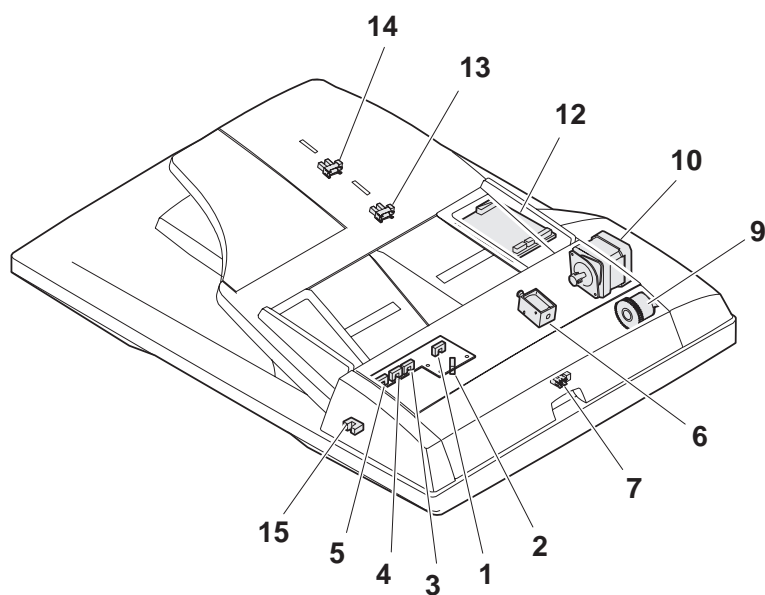
## [4] EXTERNAL VIEW AND INTERNAL STRUCTURE

### 1. External view



No.	Name	No.	Name	No.	Name
1	Document set tray	2	Document guide	3	Document feed section cover
4	Document transport section cover	5	Document exit section		

### 2. Internal structure

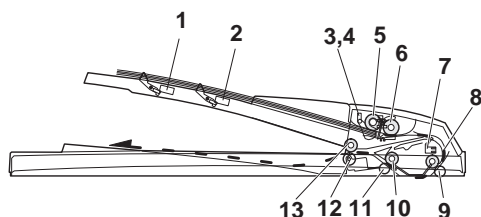


#### Sensors and detectors

No.	Code	Name	Type	Function, operation
1	W0	Document set sensor	Photo transmission	Document presence detection
2	COVER	Open/close sensor	Photo transmission	Paper feed unit open/close detection
3	W1	Document sensor (A4R, LTR, A5)	Photo transmission	Tray document width detection
4	W2	Document width sensor (B4R, B5)	Photo transmission	Tray document width detection
5	W3	Document width sensor (WLTR, A5R, A4, LT)	Photo transmission	Tray document width detection
6	PSOL	Pickup solenoid	—	—
7	PAPER	Paper entry sensor	Photo transmission	Document presence detection
9	CLH	Transport clutch	—	—
10	MOT	SPF motor	Stepping motor	Tray paper feed, transport, paper exit roller drive
12	—	Interface PWB	—	SPF control and communication with the copier body
13	L1	Document length detection SW (Short)	Photo transmission	Tray document length detection
14	L2	Document length detection SW (Long)	Photo transmission	Tray document length detection
15	COVER OPEN	Book sensor	Photo transmission	Detects SPF floating.

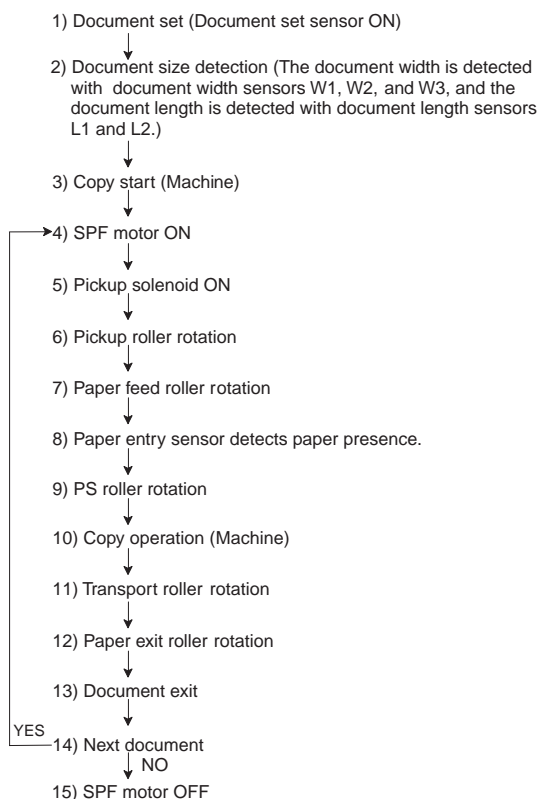
## [5] OPERATIONAL DESCRIPTION

### 1. Paper feed section major parts



No.	Part name	Operation
1	Document length sensor (L2)	Detects the document length on the tray.
2	Document length sensor (L1)	Detects the document length on the tray.
3	Document length sensor (W0)	Detects the presence of document.
4	Document width sensor (W1, W2, W3)	Detects the document width.
5	Pickup roller	Picks up the document.
6	Paper feed roller	Feed and transport the document.
7	Paper entry sensor (PAPER)	Detects the document transport.
8	PS roller	Makes synchronization between the document lead edge and the image lead edge.
9	PS follower roller	Makes synchronization between the document lead edge and the image lead edge.
10	Transport roller	Transports the document.
11	Transport follower roller	Transports the document.
12	Paper exit follower roller	Discharges the document.
13	Paper exit roller	Discharges the document.

### 2. Brief descriptions of operations



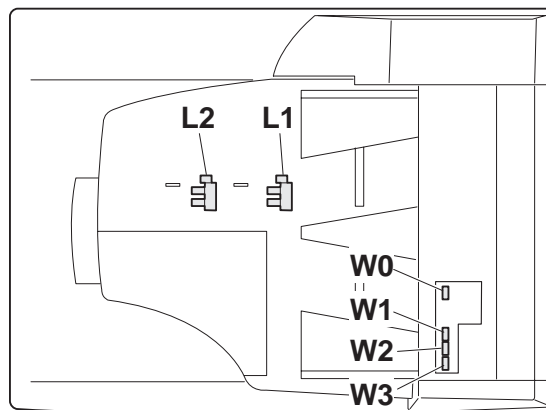
### 3. Document size detection

#### Document size detection by document set tray

When a document is set on the document set tray in the auto mode of paper/copy magnification ratio selection, the document size is detected to perform the auto selection function of paper and the copy magnification ratio according to the detected document size.

When documents of different sizes are mixed and set on the tray, the max. size is detected. The document width is detected by the document width sensors (W1, W2, W3), and the document length is detected by the document length sensors (L1, L2) to determine the document size.

The document size judgment is made after a certain time from when the document set sensor (W0) detects the document.



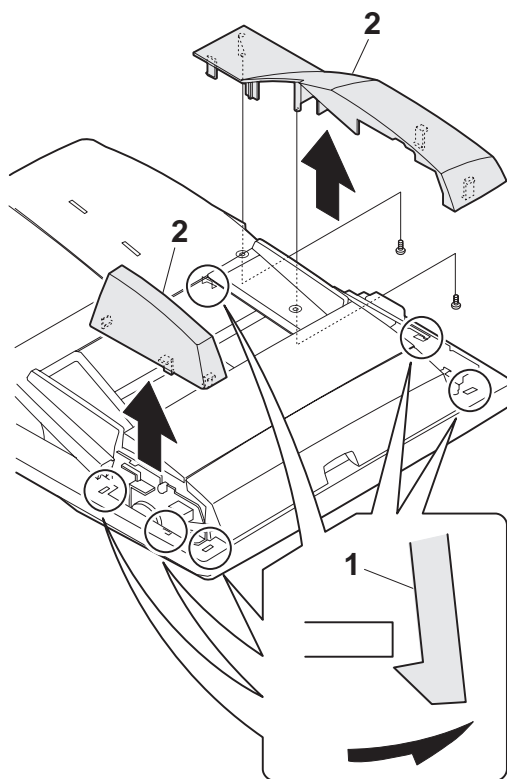
	Document size and set direction	Document width sensor			Document length sensor	
		W1	W2	W3	L1	L2
AB series	A5	○	●	●	●	●
	B5	○	○	●	●	●
	A5R	●	●	●	●	●
	A4	○	○	○	●	●
	B5R	●	●	●	○	●
	A4R	○	●	●	○	●
	8.5" × 13"	○	●	●	○	○
	B4	○	●	●	○	○
Inch series	A3	○	○	○	○	○
	8.5" × 5.5"	○	●	●	●	●
	8.5" × 5.5"R	●	●	●	●	●
	11" × 8.5"	○	○	○	●	●
	11" × 8.5"R	○	●	●	○	●
	8.5" × 13"	○	●	●	○	○
	8.5" × 14"	○	●	●	○	○
	11" × 17"	○	○	○	○	○

[Note] Sensor ON: ○ OFF: ●

## [6] DISASSEMBLY AND ASSEMBLY

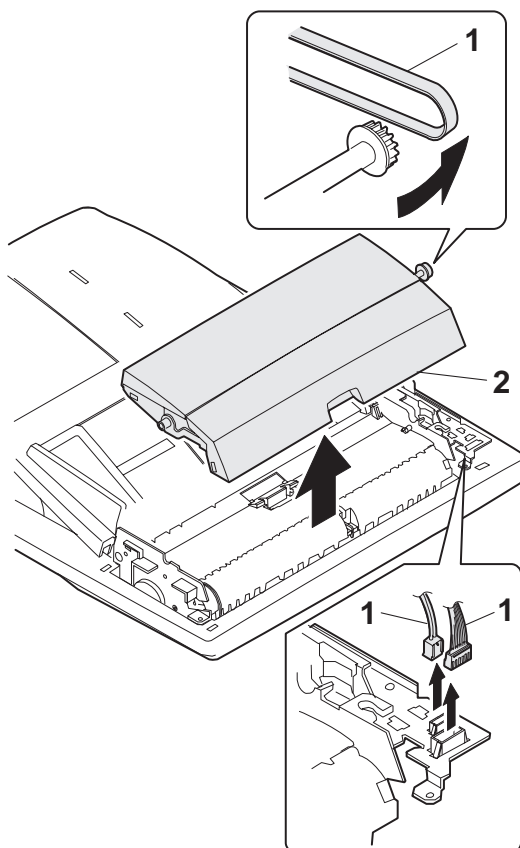
### 1. External fitting section

NOTE: Remove the pawl in the arrow direction.

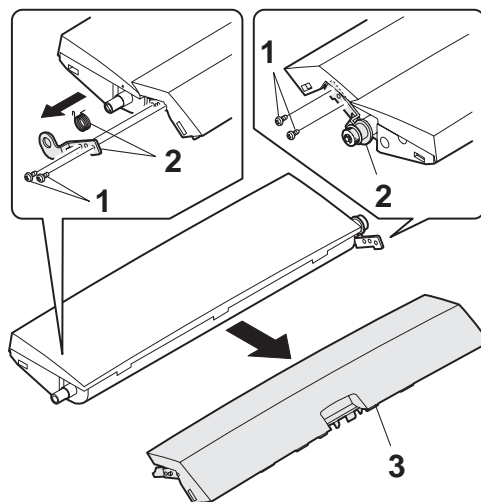


### 2. Paper feed unit section

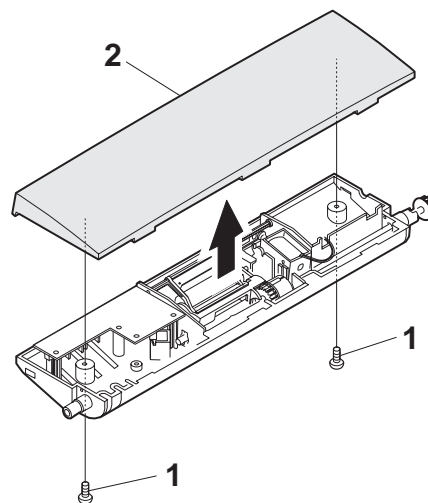
#### 1) Paper feed unit



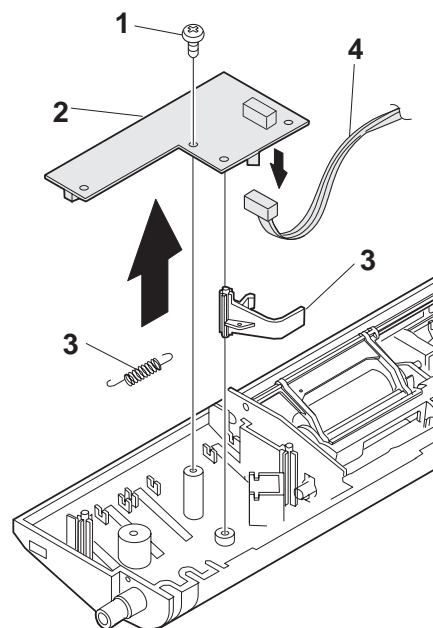
#### 2) Document transport section cover



#### 3) Document feed section cover



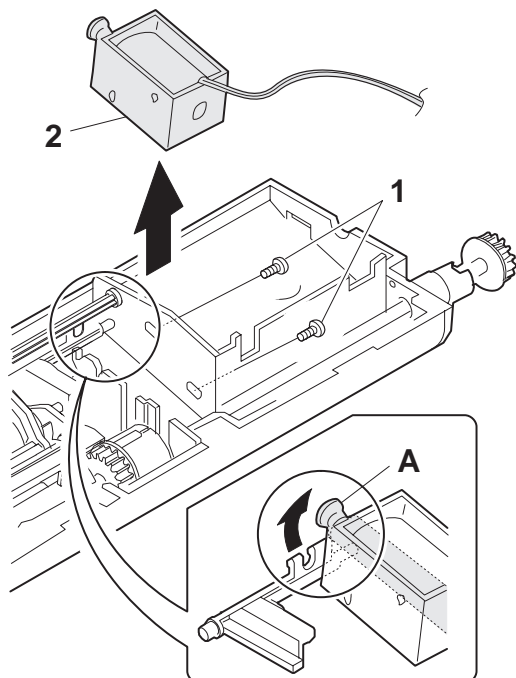
#### 4) Sensor PWB



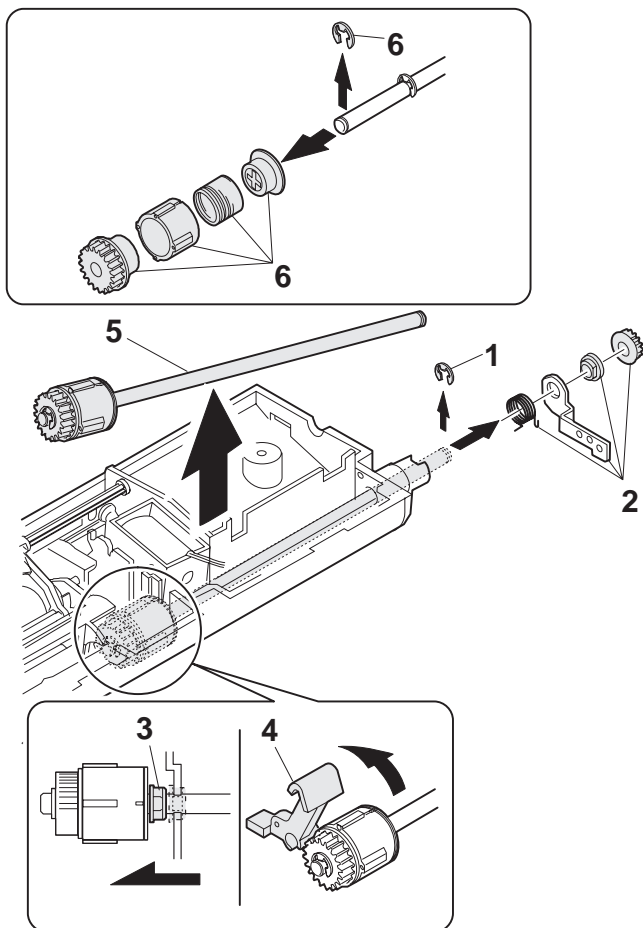


## 5) Pickup solenoid

NOTE: Remove section A of the pickup solenoid from the solenoid arm groove.

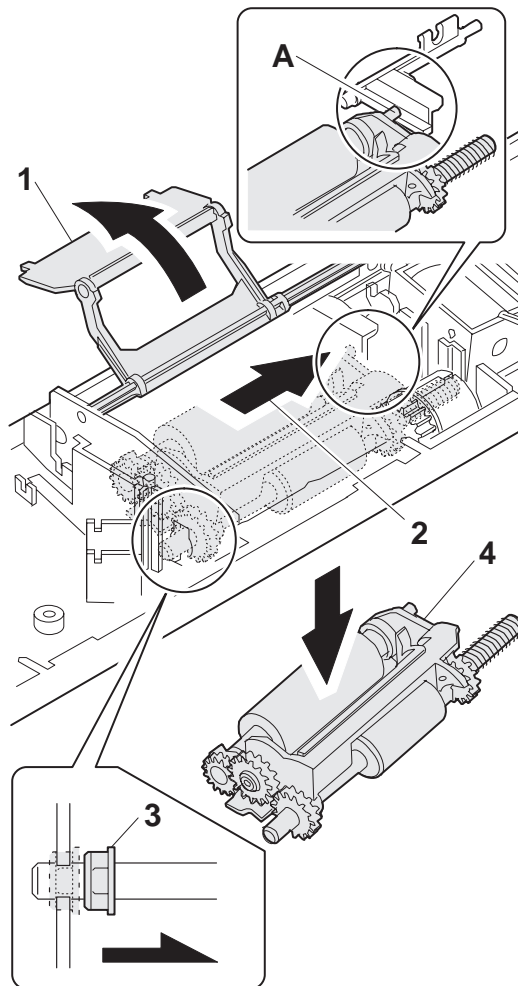


## 6) Clutch gear ass'y

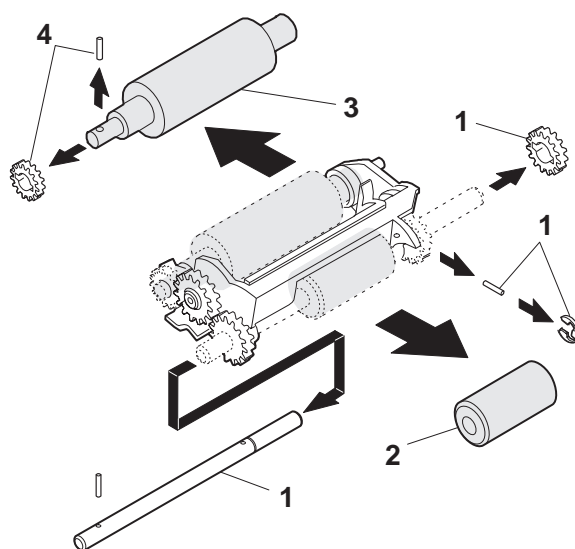


## 7) Pickup roller ass'y

NOTE: When setting the pickup roller ass'y 4, check that rib A is on the solenoid arm rib.

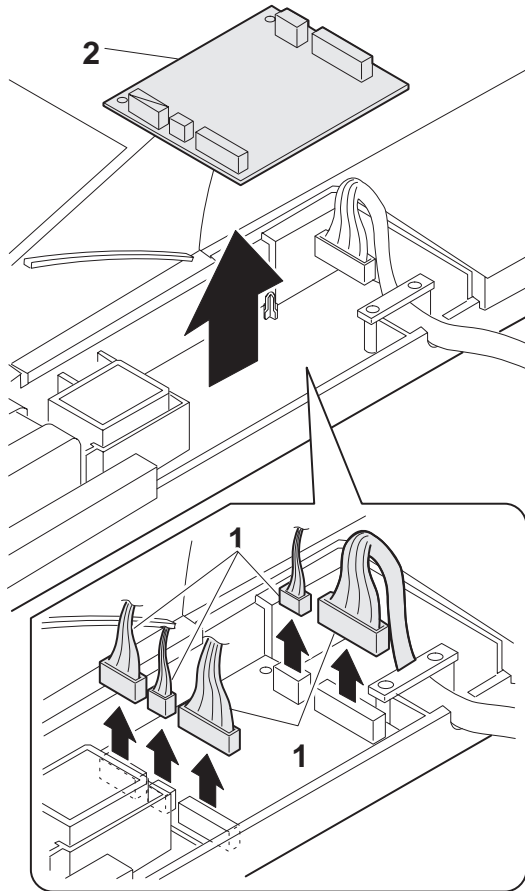


## 8) Pickup roller, paper feed roller

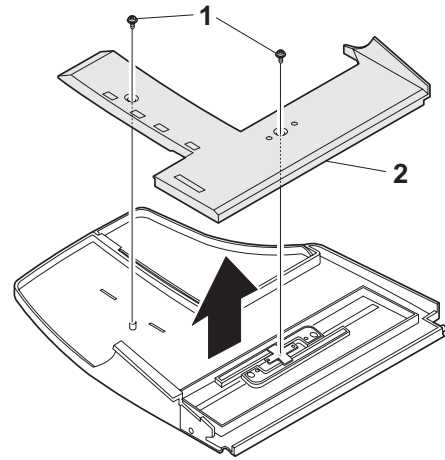




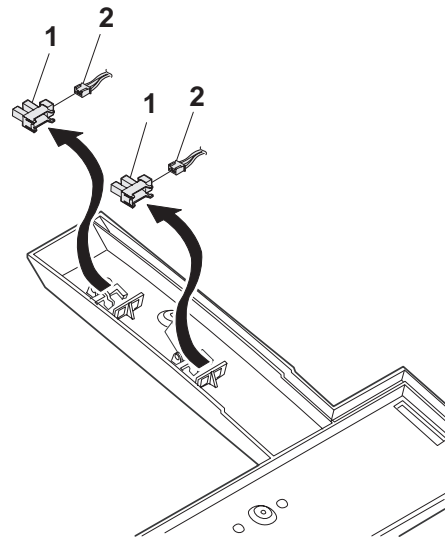
### 3. Interface PWB



### 2) Rack cover

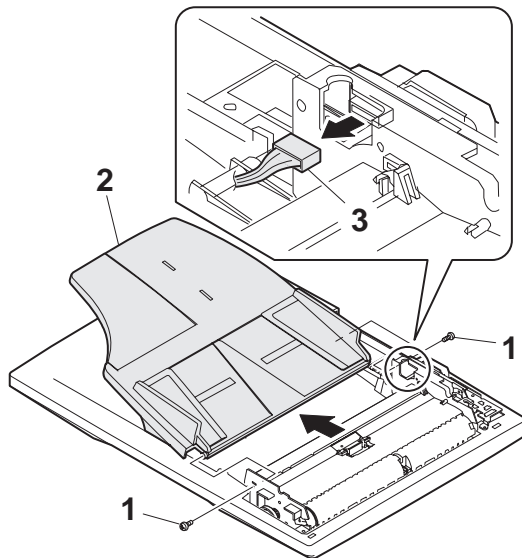


### 3) Document length detection SW



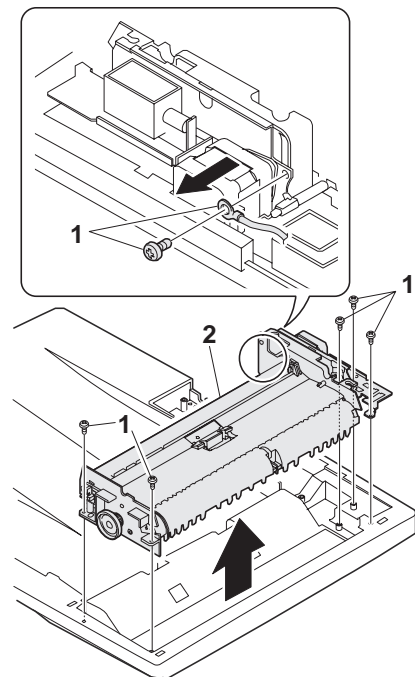
### 4. Document tray section

#### 1) Document tray

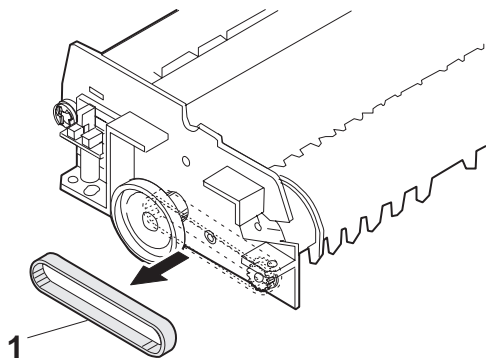


### 5. Drive frame section

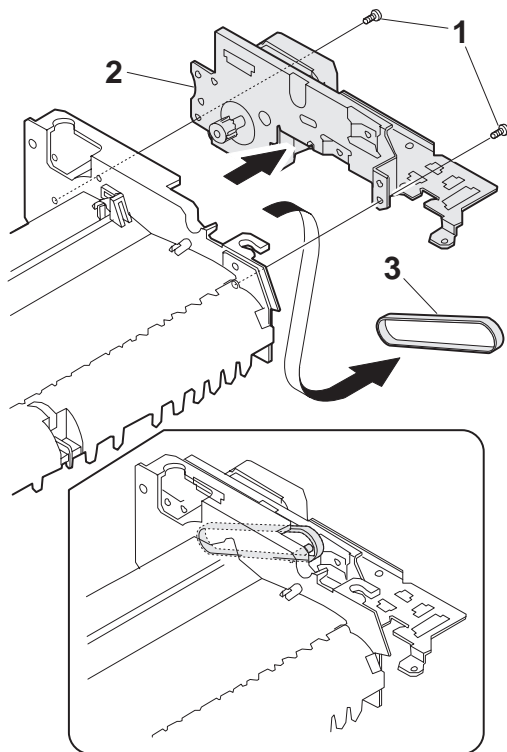
#### 1) Drive frame unit



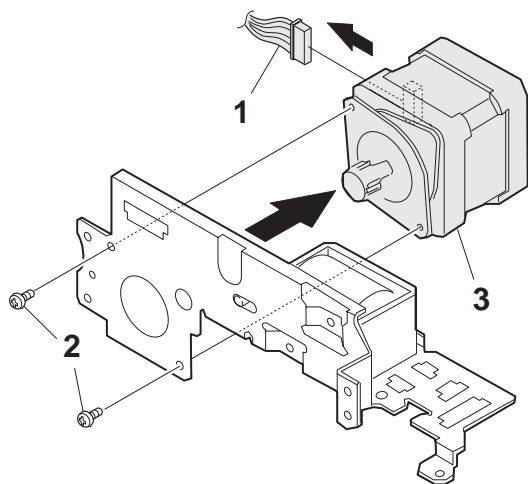
## 2) Transport belt



## 3) Drive frame ass'y and drive belt



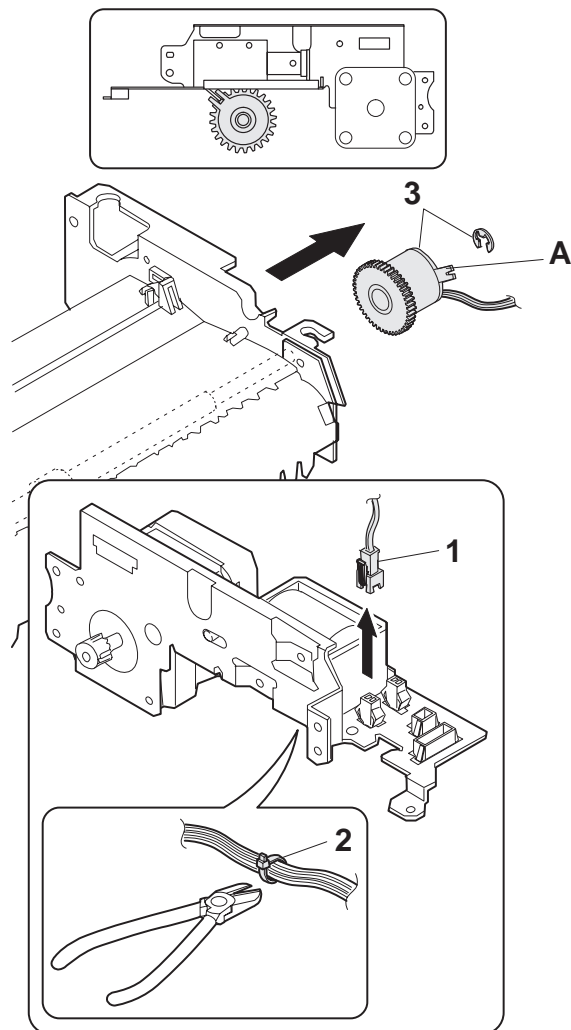
## 4) SPF motor



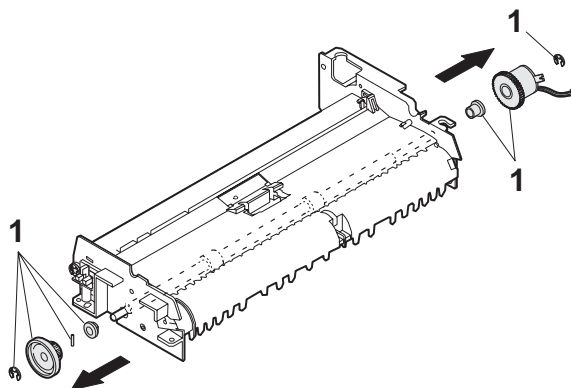
## 6. Transport section

### 1) Clutch

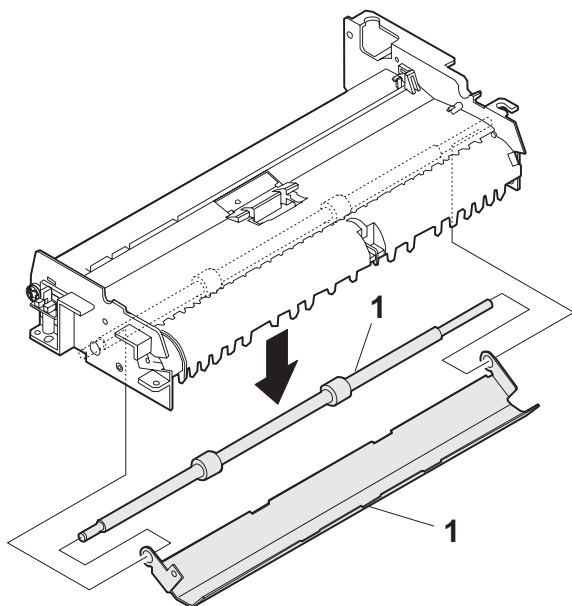
NOTE: When assembling, check that the rib is in the clutch groove A, and fix the E-ring.



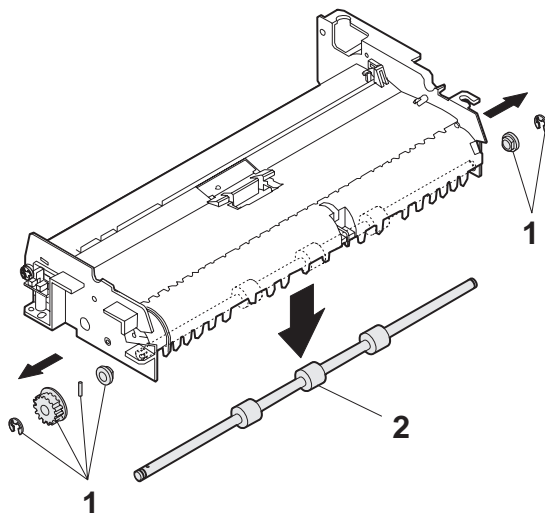
### 2) Transport roller gear



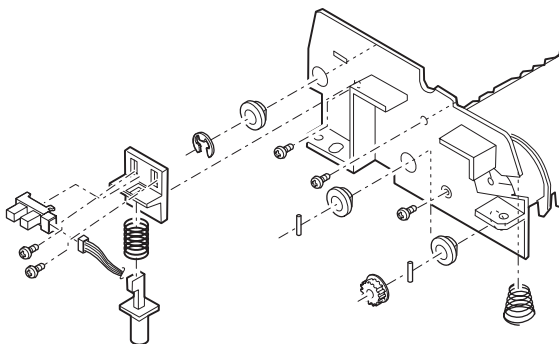
### 3) Transport roller



### 4) PS roller

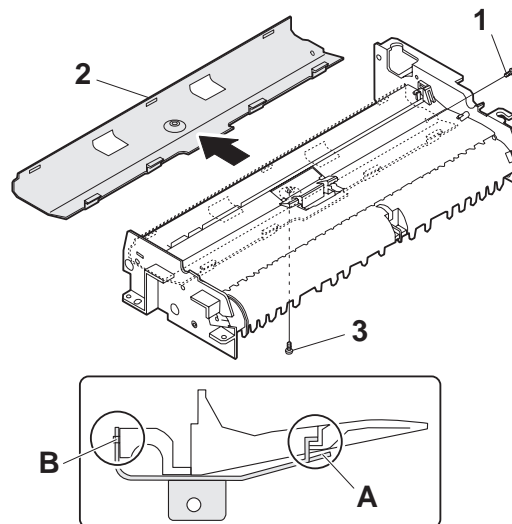


### 5) Book sensor

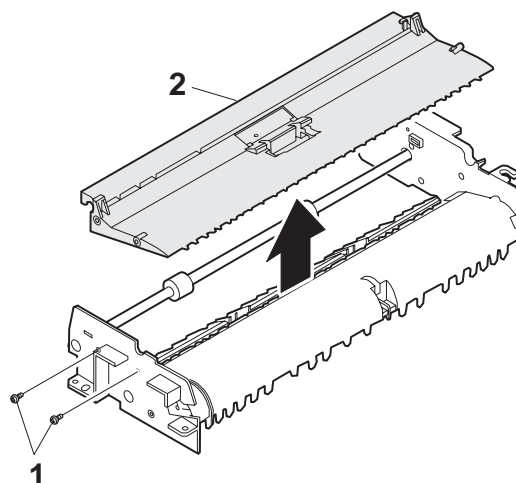


### 6) Paper feed paper guide upper

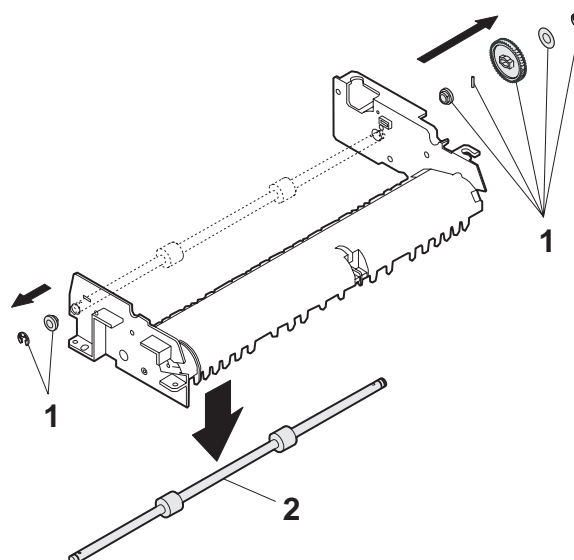
NOTE: When assembling, check that the paper feed paper guide upper is set to rib A and boss B.



### 7) Paper feed paper guide lower



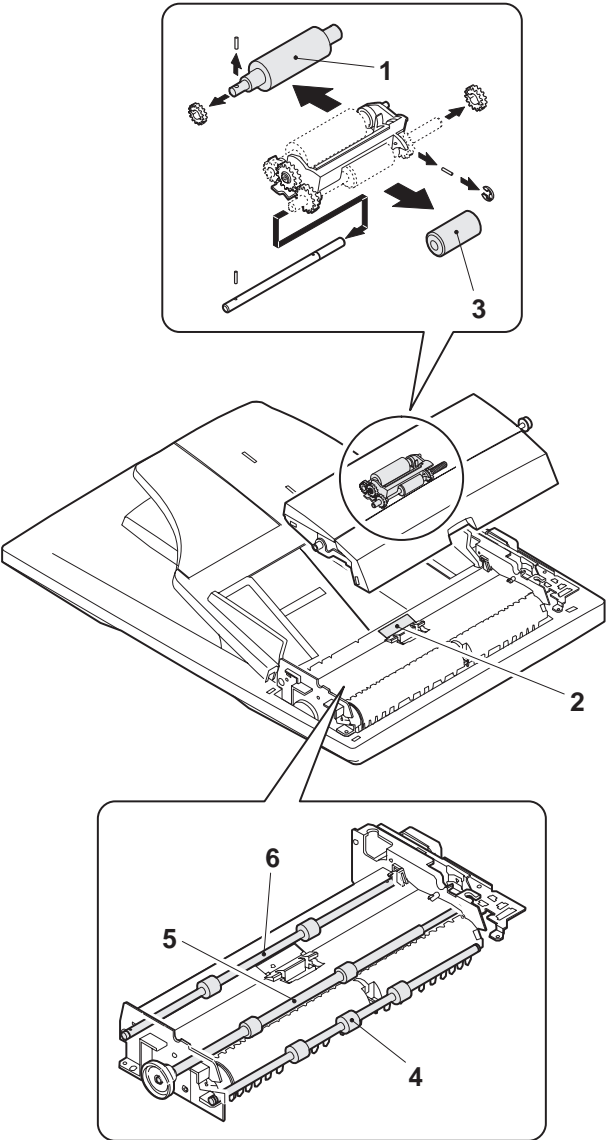
### 8) Paper exit roller



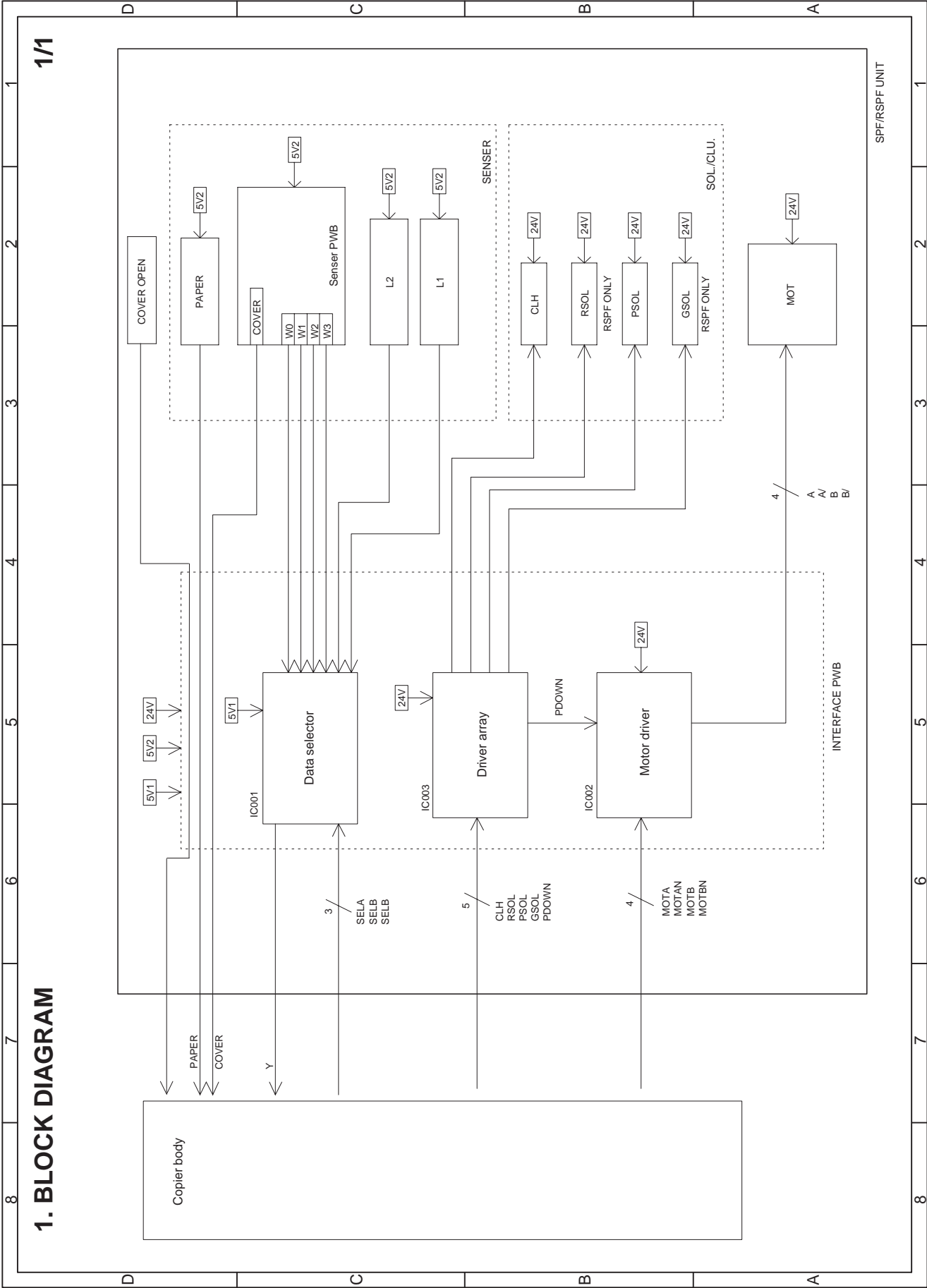
# [7] MAINTENANCE

## 1. Maintenance parts

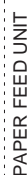
No.	Name	Work item	When service call	Remark
(1)	Pickup roller	Cleaning	○	
(2)	Separation pad	Cleaning	○	
(3)	Paper feed roller	Cleaning	○	
(4)	PS roller	Cleaning	○	
(5)	Transport roller	Cleaning	○	
(6)	Paper exit roller	Cleaning	○	



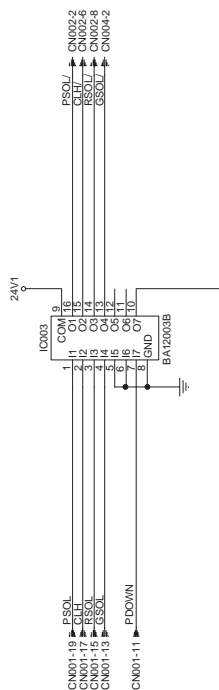
[Note] When performing maintenance, refer to [6] DISASSEMBLY AND ASSEMBLY.



## 1/1



## 1/1



1	SEL A	2	SEL B
3	Y	4	SEL C
5	LGND	6	LGND
7	5V1	8	PAPER
9	5V2	10	COVER
11	PDWON	12	COVER OPEN
13	GSOL	14	MOTB
15	RSOL	16	MOTBN
17	CLH	18	MOT A
19	PSOL	20	MOTAN
21	PGND	22	24V
23	PGND	24	24V

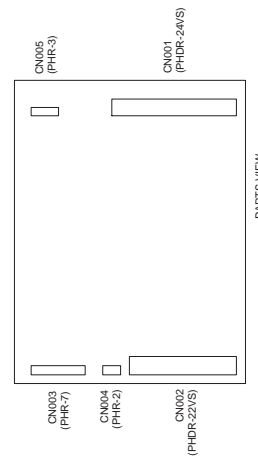
1	5V2	2	PSOL/
3	5V2	4	5V2
5	LEDSPPD	6	CLH/
7	W0	8	RSOL/
9	W2	10	24V1
11	W3	12	24V1
13	W1	14	24V1
15	L1	16	COVER
17	L2	18	PAPER
19	LGND	20	LGND
21	LGND	22	LGND

(PHR-6)	1	B
	2	B/
	3	A
	4	A/
	5	24V1
	6	24V1
	7	N C

1	24V1
2	GSOL/

1	COVER OPEN
2	LGND
3	LED POWER

MATRIX	SELC	SELB	SELA	Y
	L	L	L	W1
	L	L	H	W2
	L	H	L	W3
	L	H	H	W0
	H	L	L	L1
	H	L	H	L2
	H	H	L	SPF/RSPP
	H	H	L	L



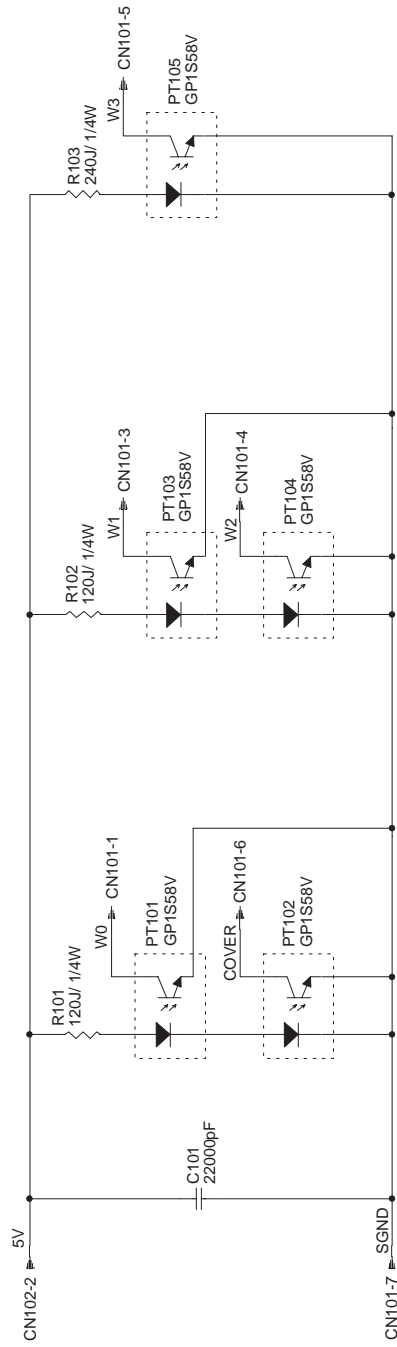


1/1

## 2. SENSOR PWB

CN101  
(PHR-7)

1	W0
2	5V
3	W1
4	W2
5	W3
6	COVER
7	SGND



**[PARTS SURFACE]**

COVER OPEN	1
LGND	2
LED POWER	3



## CAUTION FOR BATTERY REPLACEMENT

(Danish)

ADVARSEL !

Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.

Udskiftning må kun ske med batteri  
af samme fabrikat og type.

Levér det brugte batteri tilbage til leverandoren.

(English)

Caution !

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type  
recommended by the manufacturer.

"BATTERY DISPOSAL"

CONTAINS MANGANESE DIOXIDE LITHIUM BATTERY  
MUST BE DISPOSED OF PROPERLY.

REMOVE THE BATTERY FROM THE PRODUCT AND  
CONTACT FEDERAL OR STATE ENVIRONMENTAL  
AGENCIES FOR INFORMATION ON RECYCLING  
AND DISPOSAL OPTIONS.

(Finnish)

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.

Vaihda paristo ainoastaan laitevalmistajan suosittelemaan  
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden  
mukaisesti.

(French)

ATTENTION

Il y a danger d'explosion s' il y a remplacement incorrect  
de la batterie. Remplacer uniquement avec une batterie du  
même type ou d'un type équivalent recommandé par  
le constructeur.

Mettre au rebut les batteries usagées conformément aux  
instructions du fabricant.

(Swedish)

VARNING

Explosionsfara vid felaktigt batteribyte.

Använd samma batterityp eller en ekvivalent  
typ som rekommenderas av apparattillverkaren.

Kassera använt batteri enligt fabrikantens  
instruktion.

(German)

Achtung

Explosionsgefahr bei Verwendung inkorrektter Batterien.

Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder  
vom Hersteller empfohlene Batterien verwendet werden.

Entsorgung der gebrauchten Batterien nur nach den vom  
Hersteller angegebenen Anweisungen.

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